DIFFERENTIAL DIAGNOSIS OF ABDOMINAL TUBERCULOSIS.

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There are certain interrelations between the various forms of abdominal tuberculosis which lend themselves to brief discussion. From that standpoint it is possible to consider the several types of tubercular peritonitis, tuberculosis of the liver and gall bladder,—pancreas, spleen, fallopian tubes and ovaries and certain forms of intestinal tuberculosis including tuberculosis of the appendix.

While primary tuberculosis within the abdomen may be conceived as possible, it is safe to assume that there are few if any exceptions to the general rule that initial tubercular lesions are of the lymphatic tissues, particularly the lymph glands, and that when tuberculosis manifests itself as peritonitis or disease of the abdominal viscera, the same rule holds true that applies in pulmonary tuberculosis, that is, that the disease is a conflagration arising from a smoldering tubercular lymphadenitis which originated during infancy or in childhood. Von Pirquet maintained from his observations of the cutaneous tuberculin reaction that 60 per cent. of adults have or have had tuberculosis. Observations by subsequent investigators have more than confirmed this estimate. Fishberg (M. Fishberg, the extent of tuberculous infection in childhood among the children of New York tenements as evidenced by the application of the cutaneous tuberculin reaction, *Medical Record,* N. Y., 1915, LXXXVII, 417) found in 589 children examined at the age of 14 years 75% reactors; of 692 children of tuberculous parents in New York tenements at the age of 14, 83.79%, reactors; under 1 year of age 10% of children reacted.

Children are fortunately born with a high degree of resistance to all disease. For example, at birth a child's immunity to measles and to diphtheria is very high. Measles is rare under six months of age as is likewise diphtheria. This native resistance to disease diminishes rapidly after the first year, it being at a minimum between the ages of 5 and 7. It may be assumed that native immunity to tuberculosis is likewise high at birth and that infection by the tubercle bacillus is arrested by the first line entrenchments consisting of the lymphatic tissues. The tubercle bacilli, however, halted in the lymph glands produce adenitis which in the vast majority of cases is sooner or later checked by the protective formation of specific antibodies and the process becomes quiescent unless from one cause or another the individual's resistance is reduced and the activities of the invaders again become manifest resulting in various types of clinical tuberculosis. So that abdominal tuberculosis excepting lymphatic tuberculosis is to be considered in the strict sense always secondary.

The pathways by which tuberculosis gains a foothold in the peritoneal cavity are either the blood stream, lymph channels or the rupture of a lymphatic gland, from diseased fallopian tubes, appendix, gall bladder or other such focus. It has been demonstrated that the tubercle bacillus may pass through the intestinal wall without the presence of ulceration and also that the disease may spread apparently through the diaphragm through the thoracic cavity without apparent lesion, although it is questionable whether or not the circulating blood is not in this case the transporting factor.

Types of Peritoneal Tuberculosis.—Miliary tuberculosis of the peritoneum may be a part of miliary tuberculosis. Tubercular peritonitis proper presents itself in various forms depending largely upon the rapidity of the inflammation. In the more acute types are seen a considerable amount of fluid with little tendency to the formation of adhesions. In the more chronic cases of this ascitic form thickening and rolling up of the omentum takes place, thickening and shortening of the mesentery, thickening and shortening of the intestine.

In this type of tubercular peritonitis spontaneous recovery may take place. Elestrotov found that in 136 cases treated medically 31.6 recovered; in 240 cases treated surgically 78.3% recovered. (Osler's Modern Medicine, Vol. V, p. 578.) Again, a loculated or encysted form may be recognized. the intestines are matted together by adhesions and enclose collections of fluid which may be serofibrinous, turbid or purulent exudations, are larger becoming confluent masses of caseous material surrounded by adhesions and giving rise to suppurating foci among the coils of the intestines. In this way there may be multiple abscesses with a tendency to erode throughout the surrounding tissues either through the abdominal wall usually in the region of the umbilicus or through a viscus as the intestines, kidney, vagina. Finally, in the obliterative form universal adhesions join the viscera and the abdominal wall. There is no exudation as seen in the loculated or ascitic form. Sometimes the masses so formed are tumor-like and may be readily felt through the abdominal wall or through the rectum. As a matter of fact, in many cases of tubercular peritonitis a rectal examination discloses masses that with difficulty are felt through the abdominal wall. It is seen then that in the more rapid form there is little tendency to the formation of tumors and a considerable tendency to the formation of free fluid in the abdominal cavity and in the slow type the tendency to the formation of tumors is marked and practically no tendency for the extravasation of fluid and between these two types lies the intermediate form in which there is very considerable thickening and adhesion formation and pockets of extravasated fluid modified by caseous degeneration. The symptoms vary chiefly with the rapidity of the disease. There is usually a history of failing health, loss of appetite, strength and weight as is seen in any form of tuberculosis. In addition to this symptoms will vary according to the anatomical changes present. In other words, according to the position and density of adhesions and hyperplastic masses. Such symptoms will be referable to the alimentary tract and to pain arising from pressure or more often from pressure and stenosis of the intestines with resulting colic. It is not

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unusual to find a leukocytosis, especially in children.

Tuberculosis of the Gall Bladder.—Two types have been recognized, a chronic ulcerative form associated with the presence of gall stones and an acute form with necrosis of the mucous membrane which may be associated with tuberculosis of the cystic and common bile ducts (Rolleston, Diseases of the Liver, etc., 1912, page 627). Primary tuberculosis of the gall bladder may occur as a chronic ulcerative process in the sense that it is not associated with clinical tuberculosis elsewhere. It may also occur following pyogenic infection of the gall bladder either with or without calculus. Secondary tuberculosis of the gall bladder may result from infection of other organs, especially the lungs or as part of general miliary tuberculosis (Bandelier-Roepke Die klinik der Tuberkulose, 1914, p. 440). The process may extend from the gall bladder to the liver or from the liver to the gall bladder. Diagnosis can scarcely be made except by means of exploratory laparotomy. Tuberculosis of the gall bladder may result in the persistence of a fistula after operation. Pericholangitis may be tubercular and shows miliary tubercles about the duct with an effusion of fluid and adhesions.

Tuberculosis of the female pelvic organs usually arises in the fallopian tubes, ovaries and uterus. It is of importance as a possible source of tubercular peritonitis. It is unnecessary to enter into a description of these lesions further than to say that small and large tubercles, ulceration and caseation with distension of the tubes and ovaries may occur. In relation to the treatment of tubercular peritonitis the removal of a tuberculous uterus or the adnexa, particularly a tubercular fallopian tube, may be the controlling factor in the treatment of peritoneal tuberculosis. This is also true regarding tuberculosis of the gall ladder and appendix and these three organs, appendix, fallopian tube and gall bladder should always be carefully inspected during an operation for tubercular peritonitis.

Tuberculosis of the liver may be either a part of general miliary tuberculosis in which case the lesions are diffuse throughout the liver or localized tuberculosis of the liver may occur in the form of bile duct tuberculosis forming caseous tuberculous masses or solitary tuberculous abscess, the latter of which is very rare. As a rule hepatic tuberculosis is secondary to outspoken processes elsewhere, particularly tubercular ulceration of the intestines in which condition hepatic involvement is rather more common than is generally suspected; the infection taking place through the portal vein produces miliary tubercles and later masses of tubercular tissue,—in effect a tuberculosis of the portal spaces. The liver is usually somewhat larger than normal and on section shows a number of white caseous areas or bile stained cavities with caseous walls. Jaundice is absent. Again, multiple tubercular lesions may occur in the liver closely resembling gummata and fairly easily nucleated. Sometimes these masses may be felt through the abdominal walls during life and may be associated with considerable pain. In some cases splenic enlargement is present. Resemblance to carcinoma of the liver is very considerable on account of emaciation, general weakness and loss of appetite.

With secondary infection of pyogenic organisms the tuberculous mass may develop into an abscess which may be either within the substance of the liver or near the surface, the latter case giving rise to localized perihepatic or subphrenic abscess. Single lesions are very rare. There is nothing characteristic in the symptomatology of tuberculosis of the liver or gall bladder and diagnosis is practically never made except upon operation or post mortem.

Tuberculosis of the Pancreas.—Miliary tubercles in the pancreas are not uncommon in tuberculosis of other organs, especially in children. But while tubercular masses have been described in the pancreas palpable through the abdominal wall, they are most rare and appreciable interference with the function of the pancreas by tubercular disease has not been described.

There are three interesting forms of tuberculosis which may occur in the region of the caecum,—tuberculosis of the appendix, hypertrophic tuberculoma of the ilium and hypertrophic tuberculoma of the caecum and tubercular lymphadenitis of the mesentery behind the appendix. The latter may give rise to such large glands as to stimulate chronic appendicitis. As a rule they are readily removed. Tuberculosis of the appendix is said to be found in 2% of the operations upon the appendix (Lockwood). It is usually secondary to tuberculosis of the caecum but may be primary. Usually there is simply tubercular ulceration or in other cases extensive involvement of the appendicial walls with caseation. Milary tubercles and adhesions may be seen in the adjoining peritoneum either localized or more diffused. Hypertrophic appendicial tuberculoma has been observed. Macroscopically it is many times difficult to distinguish tubercular from other forms of appendicitis. Hypertrophic tuberculoma of the ilium or caecum arises from either submucous or subserous lesions resulting in great thickening of the intestinal wall to such an extent that hyperplastic tuberculoma of the ilium or caecum may readily be mistaken for sarcoma. A helpful point in the diagnosis of tubercular appendicitis and hypertrophic tubercular changes in the ilium or the caecum lies in the fact that tuberculosis of the lung is also present. The local symptoms are no different from those of other forms of tumor or low grade inflammation. Stierlin's sign is of importance in differentiating hyperplastic tuberculoma of the caecum from cancer. By means of the X-ray it is seen in the presence of the tubercular condition that the bismuth mass goes more rapidly through the caecum resulting in an X-ray picture which gives no bismuth shadow in the caecum—only above and below it. If the question of diagnosis between hypertrophic tuberculoma of the ilium and of the caecum arises, the caecum empty of bismuth with the X-ray test would speak in favor of involvement of the caecum or on the other hand if bismuth shows in the caecum it would speak in favor of the lesion being in the

ilium. Strangely enough Stierlin's sign is absent in cancer of the caecum. Patient R. D., 29 years old, tailor. Father died of tuberculosis. Patient came to the University of California service, San Francisco Hospital, suffering from pain in the right iliac region. He had been treated for pulmonary tuberculosis which was of about one year's duration. His present illness began with a sudden pain in the right lower quadrant which disappeared in a few minutes some two and one-half weeks before admission to the hospital. This pain recurred suddenly while walking and was accompanied by nausea and vomiting. The pain spread to the whole abdomen. The patient was admitted to the hospital with a fever of 100.5°. Examination of the abdomen showed slight rigidity of the entire abdomen, lower more than the upper, and of the right more than the left, considerable tenderness in the outer half of the right iliac fossa. An elongated round boggy mass could be palpated at McBurney's point, which was very tender. With rest in bed the pain and local symptoms disappeared in the course of a week so that there remains at the present time a patient with pulmonary tuberculosis and a mass about 2½ inches long by an inch wide, sausage-shaped, lying obliquely in the region of the appendix only slightly tender on pressure and which undoubtedly is a hypertrophic tuberculoma either of the ilium or of the caecum. Stierlin's sign being present in this case we take it to be a lesion of the ilium.

Chronic hyperplastic tuberculosis while probably more common in the iliocæcal region has also been observed in the sigmoid flexure. The diagnosis of subserous fibroma should be avoided until tuberculosis has been excluded.

In conclusion it may be said that tuberculosis of the abdominal viscera is commonly associated with pulmonary tuberculosis but that the primary infection is to be searched for in the lymphatic system, especially the peribronchial and retroperitoneal glands; that the type in which tubercular peritonitis presents itself depends upon the rapidity of the inflammation, rapid processes being associated with tendency to formation of fluid and less tendency to the formation of adhesions a slower process giving rise to thickening and adhesions with fluid in the shape of walled-off collections and abscess formation, the most chronic giving rise to adhesions alone and hyperplastic growths in the walls of the intestine. Fever is usual in the acute and subacute forms and may be absent in the chronic forms, or there may be a subnormal temperature. That the fewer adhesions the better prognosis and that the ascitic form lends itself readily to operative interference. When operation is resorted to special attention should be devoted to the appendix, fallopian tubes and gall bladder.

TOXIC GASTRIC HEMORRHAGE.*

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While the development of gastric surgery has proved ulcer to be the most frequent cause of bleeding from the stomach and duodenum, the coincident development of pathology in the living has emphasized the fact that frequently there may be gastric hemorrhage without any demonstrable surgical gastric lesion. The opinion is prevalent among the laity that hematemesis means ulcer requiring operation, and hemorrhage from the stomach is too readily accepted by physicians as sufficient evidence to warrant surgery. I wish to call attention to the hemorrhages occurring from other than true surgical lesions, and to the importance of differentiating the causes of bleeding that are medical from those that are surgical.

The calloused ulcer derives greatest benefit from surgery. However, gastric surgery has been too often resorted to without benefit to the patient. Particularly is this true in cases in which hemorrhage was the principal cause for exploration. Often when an abnormal constitutional condition is not obvious, bleeding from the upper gastro-intestinal tract is considered as coming from a so-called hidden or non-symptomatic chronic ulcer, and the patient carries a gastro-enterostomy for ulcer for which there was not sufficient evidence before operation and no evidence at the time of operation. The burden of differentiating hemorrhage due to chronic ulcer from hemorrhage due to non-surgical conditions rests with the internist.

It is true that we occasionally see ulcers, benign and malignant, of which the histories are meager and alone are not sufficient for clinical conclusion The proportion of these will decrease with a more general knowledge of the varying clinical factors that are helpful in the recognition of the atypical group, and roentgenology will further assist in their diagnosis. Clinical study supplemented by the diagnostic efficiency developed in gastric roentgenology has made it possible to determine the presence or absence of the bleeding gastric lesions that can be benefited by surgery in a very large percentage of the cases of hemorrhage from the stomach.

To designate the oozing of blood from the stomach in the supposed absence of chronic ulcer, Sir Edwin Cooper Perry suggested to Hale White [1] the term "gastrostaxis," which is similar etymologically to "epistaxis." White [2] advanced the opinion that there might be a clinical group of this type among young women having pain, vomiting, and hematemesis, without ulcer symptoms, and in whom spontaneous recovery was the rule. The suggestion brought out considerable discussion in regard to gastric hemorrhages of obscure origin by White,[3] Bolton,[4] and Hort.[5] As the conditions in which such hemorrhages usually occur are toxic, the term "toxic gastric hemorrhage" suits our purpose better and will be used in referring to them here.

Blood that is vomited and tarry stools do not always mean hemorrhage from chronic gastric ulcer. Blood from the lungs and pharynx may be swallowed and later vomited. Bleeding from

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